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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Schmülling et al

Examiner: (Not Yet Assigned)

Serial No.: 10/014,101

Group: Art Unit 2637

Filed: December 10, 2001

Docket: 1195-2

For: METHOD FOR MODIFYING
PLANT MORPHOLOGY,
BIOCHEMISTRY AND PHYSIOLOGY

Dated: April 30, 2002

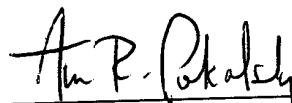
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Statement under 37 C.F.R. §1.825(a) and (b)

Sir:

I hereby state that the information recorded in the substitute paper copy of the Sequence Listing submitted herewith, includes no new matter. The information contained in computer readable form (CRF) of the sequence listing, also submitted herewith, is the same as the information recorded in the substitute paper copy of the sequence listing. The submission of both the substitute paper copy and initial CRF of the Sequence Listing is fully supported by, and does not introduce new matter into, the application as originally filed.

Respectfully submitted,



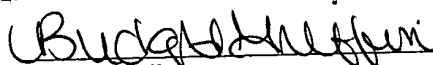
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Dated: April 30, 2002


Bridget Griffin



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SEQUENCE LISTING

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physiology

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 Ala Trp Leu Trp Ile Glu Val Leu Asn Lys Thr Leu Glu Leu Gly Leu
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 Thr Pro Val Ser Trp Thr Asp Tyr Leu Tyr Leu Thr Val Gly Gly Thr
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Gly Val Asp Phe Leu Glu Gly Ser Ile Met Val Asp His Gly Pro Pro 275 280 285		
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Lys Tyr Tyr Asp Glu Thr Ser Gln Tyr Thr Val Asn Glu Glu Met Glu 325 330 335		
Glu Leu Ser Asp Ser Leu Asn His Val Arg Gly Phe Met Tyr Glu Lys 340 345 350		
Asp Val Thr Tyr Met Asp Phe Leu Asn Arg Val Arg Thr Gly Glu Leu 355 360 365		
Asn Leu Lys Ser Lys Gly Gln Trp Asp Val Pro His Pro Trp Leu Asn 370 375 380		
Leu Phe Val Pro Lys Thr Gln Ile Ser Lys Phe Asp Asp Gly Val Phe 385 390 395 400		
Lys Gly Ile Ile Leu Arg Asn Asn Ile Thr Ser Gly Pro Val Leu Val 405 410 415		
Tyr Pro Met Asn Arg Asn Lys Trp Asn Asp Arg Met Ser Ala Ala Ile 420 425 430		
Pro Glu Glu Asp Val Phe Tyr Ala Val Gly Phe Leu Arg Ser Ala Gly 435 440 445		
Phe Asp Asn Trp Glu Ala Phe Asp Gln Glu Asn Met Glu Ile Leu Lys 450 455 460		
Phe Cys Glu Asp Ala Asn Met Gly Val Ile Gln Tyr Leu Pro Tyr His 465 470 475 480		
Ser Ser Gln Glu Gly Trp Val Arg His Phe Gly Pro Arg Trp Asn Ile 485 490 495		
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Phe Leu Pro Ile Ser Leu Asn Leu Thr Val Leu Thr Asp Pro Phe Ser
35 40 45
Ile Ser Ala Ala Ser His Asp Phe Gly Asn Ile Thr Asp Glu Asn Pro
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Gly Ala Val Leu Cys Pro Ser Ser Thr Thr Glu Val Ala Arg Leu Leu
 65 70 75 80
 Arg Phe Ala Asn Gly Gly Phe Ser Tyr Asn Lys Gly Ser Thr Ser Pro
 85 90 95
 Ala Ser Thr Phe Lys Val Ala Ala Arg Gly Gln Gly His Ser Leu Arg
 100 105 110
 Gly Gln Ala Ser Ala Pro Gly Gly Val Val Val Asn Met Thr Cys Leu
 115 120 125
 Ala Met Ala Ala Lys Pro Ala Ala Val Val Ile Ser Ala Asp Gly Thr
 130 135 140
 Tyr Ala Asp Val Ala Ala Gly Thr Met Trp Val Asp Val Leu Lys Ala
 145 150 155 160
 Ala Val Asp Arg Gly Val Ser Pro Val Thr Trp Thr Asp Tyr Leu Tyr
 165 170 175
 Leu Ser Val Gly Gly Thr Leu Ser Asn Ala Gly Ile Gly Gly Gln Thr
 180 185 190
 Phe Arg His Gly Pro Gln Ile Ser Asn Val His Glu Leu Asp Val Ile
 195 200 205
 Thr Gly Lys Gly Glu Met Met Thr Cys Ser Pro Lys Leu Asn Pro Glu
 210 215 220
 Leu Phe Tyr Gly Val Leu Gly Gly Leu Gly Gln Phe Gly Ile Ile Thr
 225 230 235 240
 Arg Ala Arg Ile Ala Leu Asp His Ala Pro Thr Arg Val Lys Trp Ser
 245 250 255
 Arg Ile Leu Tyr Ser Asp Phe Ser Ala Phe Lys Arg Asp Gln Glu Arg
 260 265 270
 Leu Ile Ser Met Thr Asn Asp Leu Gly Val Asp Phe Leu Glu Gly Gln
 275 280 285
 Leu Met Met Ser Asn Gly Phe Val Asp Thr Ser Phe Phe Pro Leu Ser
 290 295 300
 Asp Gln Thr Arg Val Ala Ser Leu Val Asn Asp His Arg Ile Ile Tyr
 305 310 315 320
 Val Leu Glu Val Ala Lys Tyr Tyr Asp Arg Thr Thr Leu Pro Ile Ile
 325 330 335
 Asp Gln Val Ile Asp Thr Leu Ser Arg Thr Leu Gly Phe Ala Pro Gly
 340 345 350
 Phe Met Phe Val Gln Asp Val Pro Tyr Phe Asp Phe Leu Asn Arg Val
 355 360 365
 Arg Asn Glu Glu Asp Lys Leu Arg Ser Leu Gly Leu Trp Glu Val Pro
 370 375 380

His Pro Trp Leu Asn Ile Phe Val Pro Gly Ser Arg Ile Gln Asp Phe
385 390 395 400

His Asp Gly Val Ile Asn Gly Leu Leu Leu Asn Gln Thr Ser Thr Ser
405 410 415

Gly Val Thr Leu Phe Tyr Pro Thr Asn Arg Asn Lys Trp Asn Asn Arg
420 425 430

Met Ser Thr Met Thr Pro Asp Glu Asp Val Phe Tyr Val Ile Gly Leu
435 440 445

Leu Gln Ser Ala Gly Gly Ser Gln Asn Trp Gln Glu Leu Glu Asn Leu
450 455 460

Asn Asp Lys Val Ile Gln Phe Cys Glu Asn Ser Gly Ile Lys Ile Lys
465 470 475 480

Glu Tyr Leu Met His Tyr Thr Arg Lys Glu Asp Trp Val Lys His Phe
485 490 495

Gly Pro Lys Trp Asp Asp Phe Leu Arg Lys Lys Ile Met Phe Asp Pro
500 505 510

Lys Arg Leu Leu Ser Pro Gly Gln Asp Ile Phe Asn
515 520

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<211> 2805

<212> DNA

<213> Arabidopsis thaliana

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 Ala Ile Asp Val Asp Gly His Phe Thr Val His Pro Ser Asp Leu Ala
 35 40 45
 Ser Val Ser Ser Asp Phe Gly Met Leu Lys Ser Pro Glu Glu Pro Leu
 50 55 60
 Ala Val Leu His Pro Ser Ser Ala Glu Asp Val Ala Arg Leu Val Arg
 65 70 75 80
 Thr Ala Tyr Gly Ser Ala Thr Ala Phe Pro Val Ser Ala Arg Gly His
 85 90 95
 Gly His Ser Ile Asn Gly Gln Ala Ala Ala Gly Arg Asn Gly Val Val
 100 105 110
 Val Glu Met Asn His Gly Val Thr Gly Thr Pro Lys Pro Leu Val Arg
 115 120 125
 Pro Asp Glu Met Tyr Val Asp Val Trp Gly Gly Glu Leu Trp Val Asp
 130 135 140
 Val Leu Lys Lys Thr Leu Glu His Gly Leu Ala Pro Lys Ser Trp Thr
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 Asp Tyr Leu Tyr Leu Thr Val Gly Gly Thr Leu Ser Asn Ala Gly Ile
 165 170 175
 Ser Gly Gln Ala Phe His His Gly Pro Gln Ile Ser Asn Val Leu Glu
 180 185 190
 Leu Asp Val Val Thr Gly Lys Gly Glu Val Met Arg Cys Ser Glu Glu
 195 200 205
 Glu Asn Thr Arg Leu Phe His Gly Val Leu Gly Gly Leu Gly Gln Phe
 210 215 220
 Gly Ile Ile Thr Arg Ala Arg Ile Ser Leu Glu Pro Ala Pro Gln Arg
 225 230 235 240

Val Arg Trp Ile Arg Val Leu Tyr Ser Ser Phe Lys Val Phe Thr Glu
245 250 255

Asp Gln Glu Tyr Leu Ile Ser Met His Gly Gln Leu Lys Phe Asp Tyr
260 265 270

Val Glu Gly Phe Val Ile Val Asp Glu Gly Leu Val Asn Asn Trp Arg
275 280 285

Ser Ser Phe Phe Ser Pro Arg Asn Pro Val Lys Ile Ser Ser Val Ser
290 295 300

Ser Asn Gly Ser Val Leu Tyr Cys Leu Glu Ile Thr Lys Asn Tyr His
305 310 315 320

Asp Ser Asp Ser Glu Ile Val Asp Gln Glu Val Glu Ile Leu Met Lys
325 330 335

Lys Leu Asn Phe Ile Pro Thr Ser Val Phe Thr Thr Asp Leu Gln Tyr
340 345 350

Val Asp Phe Leu Asp Arg Val His Lys Ala Glu Leu Lys Leu Arg Ser
355 360 365

Lys Asn Leu Trp Glu Val Pro His Pro Trp Leu Asn Leu Phe Val Pro
370 375 380

Lys Ser Arg Ile Ser Asp Phe Asp Lys Gly Val Phe Lys Gly Ile Leu
385 390 395 400

Gly Asn Lys Thr Ser Gly Pro Ile Leu Ile Tyr Pro Met Asn Lys Asp
405 410 415

Lys Trp Asp Glu Arg Ser Ser Ala Val Thr Pro Asp Glu Glu Val Phe
420 425 430

Tyr Leu Val Ala Leu Leu Arg Ser Ala Leu Thr Asp Gly Glu Glu Thr
435 440 445

Gln Lys Leu Glu Tyr Leu Lys Asp Gln Asn Arg Arg Ile Leu Glu Phe
450 455 460

Cys Glu Gln Ala Lys Ile Asn Val Lys Gln Tyr Leu Pro His His Ala
465 470 475 480

Thr Gln Glu Glu Trp Val Ala His Phe Gly Asp Lys Trp Asp Arg Phe
485 490 495

Arg Ser Leu Lys Ala Glu Phe Asp Pro Arg His Ile Leu Ala Thr Gly
500 505 510

Gln Arg Ile Phe Gln Asn Pro Ser Leu Ser Leu Phe Pro Pro Ser Ser
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Ser Ser Ser Ser Ala Ala Ser Trp
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<212> DNA

<213> Arabidopsis thaliana

<400> 11

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 <212> PRT
 <213> Arabidopsis thaliana

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 35 40 45
 Lys Asp Phe Gly Asn Arg Tyr Gln Leu Ile Pro Leu Ala Val Leu His
 50 55 60
 Pro Lys Ser Val Ser Asp Ile Ala Ser Thr Ile Arg His Ile Trp Met
 65 70 75 80
 Met Gly Thr His Ser Gln Leu Thr Val Ala Ala Arg Gly Arg Gly His
 85 90 95
 Ser Leu Gln Gly Gln Ala Gln Thr Arg His Gly Ile Val Ile His Met
 100 105 110
 Glu Ser Leu His Pro Gln Lys Leu Gln Val Tyr Ser Val Asp Ser Pro
 115 120 125
 Ala Pro Tyr Val Asp Val Ser Gly Gly Glu Leu Trp Ile Asn Ile Leu
 130 135 140
 His Glu Thr Leu Lys Tyr Gly Leu Ala Pro Lys Ser Trp Thr Asp Tyr
 145 150 155 160
 Leu His Leu Thr Val Gly Gly Thr Leu Ser Asn Ala Gly Ile Ser Gly
 165 170 175
 Gln Ala Phe Arg His Gly Pro Gln Ile Ser Asn Val His Gln Leu Glu
 180 185 190
 Ile Val Thr Gly Lys Gly Glu Ile Leu Asn Cys Thr Lys Arg Gln Asn
 195 200 205
 Ser Asp Leu Phe Asn Gly Val Leu Gly Gly Leu Gly Gln Phe Gly Ile
 210 215 220
 Ile Thr Arg Ala Arg Ile Ala Leu Glu Pro Ala Pro Thr Met Asp Gln
 225 230 235 240

Glu Gln Leu Ile Ser Ala Gln Gly His Lys Phe Asp Tyr Ile Glu Gly
 245 250 255
 Phe Val Ile Ile Asn Arg Thr Gly Leu Leu Asn Ser Trp Arg Leu Ser
 260 265 270
 Phe Thr Ala Glu Glu Pro Leu Glu Ala Ser Gln Phe Lys Phe Asp Gly
 275 280 285
 Arg Thr Leu Tyr Cys Leu Glu Leu Ala Lys Tyr Leu Lys Gln Asp Asn
 290 295 300
 Lys Asp Val Ile Asn Gln Glu Val Lys Glu Thr Leu Ser Glu Leu Ser
 305 310 315 320
 Tyr Val Thr Ser Thr Leu Phe Thr Thr Glu Val Ala Tyr Glu Ala Phe
 325 330 335
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 340 345 350
 Trp Glu Val Pro His Pro Trp Leu Asn Leu Leu Val Pro Arg Ser Lys
 355 360 365
 Ile Asn Glu Phe Ala Arg Gly Val Phe Gly Asn Ile Leu Thr Asp Thr
 370 375 380
 Ser Asn Gly Pro Val Ile Val Tyr Pro Val Asn Lys Ser Lys Trp Asp
 385 390 395 400
 Asn Gln Thr Ser Ala Val Thr Pro Glu Glu Glu Val Phe Tyr Leu Val
 405 410 415
 Ala Ile Leu Thr Ser Ala Ser Pro Gly Ser Ala Gly Lys Asp Gly Val
 420 425 430
 Glu Glu Ile Leu Arg Arg Asn Arg Arg Ile Leu Glu Phe Ser Glu Glu
 435 440 445
 Ala Gly Ile Gly Leu Lys Gln Tyr Leu Pro His Tyr Thr Thr Arg Glu
 450 455 460
 Glu Trp Arg Ser His Phe Gly Asp Lys Trp Gly Glu Phe Val Arg Arg
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<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
 : primer or probe

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<210> 14

<211> 35

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

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gcgtcgactt atacagttct aggtttcggc agtat

35

<210> 15

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 15

gcggtaccag agagagaaac ataaacaaat ggc

33

<210> 16

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 16

gcggtaccga attttacttc caccaaaatg c

31

<210> 17

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 17

gcggtacctt cattgataag aatcaagcta ttca

34

<210> 18
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 18

gcggtaccca aagtggtag aacgactaac a

31

<210> 19
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 19

gcggtacccc cattaaccta cccgtttg

28

<210> 20
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 20

gcggtaccag acgatgaacg tacttgtctg ta

32

<210> 21
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 21

ggggtacctt gatgaatcgt gaaatgac

28

<210> 22
<211> 31
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 22

ggggtaccct ttctcttgg tttgtcctg t

31

<210> 23

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 23

gctctagatc aggaaaagaa ccatgcttat ag

32

<210> 24

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
: primer or probe

<400> 24

gctctagatc atgagtatga gactgccttt tg

32

<210> 25

<211> 1728

<212> DNA

<213> Arabidopsis thaliana

<400> 25

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<210> 26
 <211> 1506
 <212> DNA
 <213> Arabidopsis thaliana

<400> 26

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 atcatctccg cagcctctca tgacttcgga aacataacca ccgtgacccc cggcggcgta 180

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<210> 27
 <211> 1572
 <212> DNA
 <213> *Arabidopsis thaliana*

<400> 27

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aaatataaat atgatcccaa aatgatatta tcaccgggac aaaatatatt tcaaaaaata 1560
aactcgagtt ag 1572

<210> 28
<211> 1575
<212> DNA
<213> Arabidopsis thaliana

<400> 28

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acgggtcctaa cccatccctt ctccatctct gccgcttctc acgacttcgg taacataacc 180
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<210> 29
 <211> 1611
 <212> DNA
 <213> Arabidopsis thaliana

<400> 29
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<210> 30

<211> 1515

<212> DNA

<213> *Arabidopsis thaliana*

<400> 30

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<210> 31

<211> 84

<212> DNA

<213> *Arabidopsis thaliana*

<400> 31

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tcggcgatga taccagagat cgat

84

<210> 32
<211> 28
<212> PRT
<213> Arabidopsis thaliana

<400> 32
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1 5 10 15
Asp Asn Arg Met Ser Ala Met Ile Pro Glu Ile Asp
20 25

<210> 33
<211> 2814
<212> DNA
<213> Arabidopsis thaliana

<400> 33

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35 40 45

Asp Leu Ala Ser Val Ser Ser Asp Phe Gly Met Leu Lys Ser Pro Glu
50 55 60

Glu Pro Leu Ala Val Leu His Pro Ser Ser Ala Glu Asp Val Ala Arg
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Leu Val Arg Thr Ala Tyr Gly Ser Ala Thr Ala Phe Pro Val Ser Ala
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Arg Gly His Gly His Ser Ile Asn Gly Gln Ala Ala Ala Gly Arg Asn
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Gly Val Val Val Glu Met Asn His Gly Val Thr Gly Thr Pro Lys Pro
115 120 125

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Trp Val Asp Val Leu Lys Lys Thr Leu Glu His Gly Leu Ala Pro Lys
145 150 155 160

Ser Trp Thr Asp Tyr Leu Tyr Leu Thr Val Gly Gly Thr Leu Ser Asn
165 170 175

Ala Gly Ile Ser Gly Gln Ala Phe His His Gly Pro Gln Ile Ser Asn
180 185 190

Val Leu Glu Leu Asp Val Val Thr Gly Lys Gly Glu Val Met Arg Cys
195 200 205

Ser Glu Glu Glu Asn Thr Arg Leu Phe His Gly Val Leu Gly Gly Leu
210 215 220

Gly Gln Phe Gly Ile Ile Thr Arg Ala Arg Ile Ser Leu Glu Pro Ala
225 230 235 240

Pro Gln Arg Val Arg Trp Ile Arg Val Leu Tyr Ser Ser Phe Lys Val
245 250 255

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275 280 285

Asn Trp Arg Ser Ser Phe Phe Ser Pro Arg Asn Pro Val Lys Ile Ser
290 295 300

Ser Val Ser Ser Asn Gly Ser Val Leu Tyr Cys Leu Glu Ile Thr Lys
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 Asn Tyr His Asp Ser Asp Ser Glu Ile Val Asp Gln Glu Val Glu Ile
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 Glu Glu Thr Gln Lys Leu Glu Tyr Leu Lys Asp Gln Asn Arg Arg Ile
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 His His Ala Thr Gln Glu Glu Trp Val Ala His Phe Gly Asp Lys Trp
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 Asp Arg Phe Arg Ser Leu Lys Ala Glu Phe Asp Pro Arg His Ile Leu
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842